

ABSTRACT OF THE DISCLOSURE

A silica-based coating film having a low dielectric constant not exceeding 2.5 can be formed on the surface of a substrate to serve as a planarizing layer or an interlayer insulating layer by coating the surface with a unique coating solution containing a hydrolysis-condensation product of a polyalkoxy silane compound such as tetraethoxy silane and monomethyl trimethoxy silane, which is formed by the hydrolysis of a polyalkoxy silane in the presence of a basic catalyst such as ammonia in an alcohol solvent in a relatively low concentration followed by replacement of the alcohol solvent with an aprotic polar solvent such as N-methyl pyrrolidone, followed by drying and baking at 350 to 800 °C .

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